

Supplementary Material

Directionality of attacks in natural language argumentation

Arguments sets

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News report context

Argument set 1

- A.** According to the Daily Mail, Prince William shot a reindeer yesterday. Reindeer generally have antlers. So Prince William shot an animal that has antlers.
- B.** The website of the International Institute for Evolutionary Biology explains that female reindeer generally don't have antlers. So it is not right to say that reindeer generally have antlers.
- C.** According to an article in the Washington Post, the International Institute for Evolutionary Biology is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the New York Times, the International Institute for Evolutionary Biology does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 2

A. According to BBC, President Donald Trump shot an Asiatic lion yesterday. Asiatic lions generally have a mane. So President Donald Trump shot an animal that has a mane.

B. The website of the American Society of Animal Species explains that female Asiatic lions generally don't have a mane. So it is not right to say that Asiatic lion generally have a mane.

C. According to an article in America Today, the American Society of Animal Species is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.

D. According to an article in the Guardian, the American Society of Animal Species does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 3

A. According to the Tageblatt, Grand-Duke successor Guillaume shot a Vietnamese pheasant yesterday. Vietnamese pheasant generally have a colourful plumage. So Grand-Duke successor Guillaume shot an animal that has a colourful plumage.

B. The website of the Luxembourgish Hunting Protection explains that female Vietnamese pheasant generally don't have a colourful plumage. So it is not right to say that Vietnamese pheasant generally have a colourful plumage.

C. According to an article in Le Quotidien, the Luxembourgish Hunting Protection is a pseudoscientific organization that is funded by a political activist and hires its staff based on their political position rather than their scientific expertise. Therefore the explanations on its website cannot be trusted.

D. According to an article in Luxemburger Wort, the Luxembourgish Hunting Protection does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Mathematical context

Argument set 4

- A.** We are given the information that $x^2 = xy$, and that $x = 20 + \pi - e^\pi$. By dividing both sides of the first equation by x , we get that $x = y$.
- B.** By calculating $20 + \pi - e^\pi$ on my calculator, I get that $20 + \pi - e^\pi = 0$. So one cannot divide an equation by $20 + \pi - e^\pi$, because division by 0 is not allowed.
- C.** The computer program *Mathematica*, which does not make rounding errors like a simple calculator, computes that $20 + \pi - e^\pi > 0.0009$, so $20 + \pi - e^\pi$ is a positive number, i.e. $20 + \pi - e^\pi \neq 0$.
- D.** The computer program *Maple*, which does not make rounding errors like a simple calculator, computes that $20 + \pi - e^\pi < -0.0009$, so $20 + \pi - e^\pi$ is a negative number, i.e. $20 + \pi - e^\pi \neq 0$.

Argument set 5

- A.** We are given the information that $y^2 = yx$, and that $y = 21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2$. By dividing both sides of the first equation by y , we get that $x = y$.
- B.** By calculating the value of $y = 21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2$ with pen and paper using standard methods, I get that $21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2 = 0$. So one cannot divide both sides of an equation by y , because division by 0 is not allowed.
- C.** My calculator, which is more trustworthy than a pen-and-paper calculation, tells me that $21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2 = -40$, so $21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2 \neq 0$.
- D.** The calculator app on my smartphone, which is more trustworthy than a pen-and-paper calculation, tells me that $21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2 = 36$, so $21^2 + 22^2 + 23^2 + 24^2 - 25^2 - 26^2 - 27^2 \neq 0$.

Argument set 6

- A.** We are given the information that $xz = yz$, and that $z = 3^{12} - 2^{19} - 85^2 + 72$. By dividing both sides of the first equation by z , we get that $x = y$.
- B.** By calculating the value of $z = 3^{12} - 2^{19} - 85^2 + 72$ with pen and paper using standard methods, I get that $3^{12} - 2^{19} - 85^2 + 72 = 0$. So one cannot divide both sides of an equation by z , because division by 0 is not allowed.
- C.** My calculator, which is more trustworthy than a pen-and-paper calculation, tells me that $3^{12} - 2^{19} - 85^2 + 72 = -20$, so $3^{12} - 2^{19} - 85^2 + 72 \neq 0$.
- D.** The calculator app on my smartphone, which is more trustworthy than a pen-and-paper calculation, tells me that $3^{12} - 2^{19} - 85^2 + 72 = 16$, so $3^{12} - 2^{19} - 85^2 + 72 \neq 0$.

Liar Paradox context

Argument set 7

STATEMENT: In the following pair of arguments, L denotes the sentence " L is false".

- A.** If L were true, this would mean that " L is false" is true, because L denotes the sentence " L is false". But if " L is false" is true, it follows that L is false. So if L were true, L would also be false, which is impossible. So L is not true.
- B.** If L were false, it would follow that " L is false" is true. But since L denotes the sentence " L is false", this would mean that L is true. So if L were false, L would also be true, which is impossible. So L is not false. Therefore L is true.

Pseudo-paradoxical context

Argument set 8

STATEMENT: The paradoxical reasoning that the two arguments from the previous argument pair exhibit is called the Liar paradox, and has been studied by philosophers since ancient times. One possible solution to this paradox is that the while we can normally infer the sentence "S is true" from a given sentence S, it is not right to make this inference when S is a self-referential sentence, i.e. a sentence that refers to itself. Since L denotes "L is false", the sentence "L is false" is self-referential. So according to this solution to the paradox, the mistake in the paradoxical reasoning exhibited by the previous argument pair is the step where «"L is false" is true» is inferred from the assumption that L is false at the beginning of argument B. In the following pair of arguments, M denotes the sentence "M is a meaningful sentence".

A. M consists of meaningful words combined in a comprehensible way, so M is a meaningful sentence. Thus "*M is a meaningful sentence*" is true. Since the sentence "*M is a meaningful sentence*" is identical to M, this implies that M is true.

B. Sentence M is self-referential, i.e. the inference from M to "*M is true*" is not valid. Since M is identical to "*M is a meaningful sentence*", we cannot conclude that "*M is a meaningful sentence*" is true from the fact that M is a meaningful sentence.

C. Not every self-referential sentence causes a paradox like sentence L "*L is false*". For example, if W denotes the sentence "*The first word in W has three letters*", W is just true, because the word "*The*" has three letters, and there is no paradox. In general, the inference from a sentence S to "*S is true*" is only problematic for paradoxical sentences like L, not for non-paradoxical self-referential sentences like W and M.

Pet context

Argument set 9

STATEMENT: John has a pet named Tweety.

Alice. John has built a fence around his garden, so Tweety cannot escape.

Bob. Tweety is a bird, so Tweety can escape by flying over the fence.

Charly. Tweety is a penguin, so Tweety cannot fly.

Diana. Tweety has injured one of its wings by flying into a barbwire. So Tweety can no longer fly.

Argument set 10

STATEMENT: Mark has a pet named Quicky.

Alex. Mark locked Quicky in his room, so Quicky cannot escape.

Ben. Quicky is a rodent, so Quicky can escape through the gap below the door.

Carrie. Quicky is large guinea pig, so Quicky cannot go through the gap below the door.

Daisy. Quicky has injured one of its legs while running below the gap, so Quicky can no longer move.

Argument set 11

STATEMENT: Marry has a pet named Maxy.

Alan. Marry put Maxy in a large cage, so Maxy cannot escape.

Britney. Maxy is a tiny snake, so Maxy can escape through the holes of its cage.

Clara. Maxy's cage is glazed, so there is no hole in its cage.

David. The cage is specifically intended for tiny snakes; so all holes in the cage are too small for Maxy to go through.

Scientific context (with unsupported premises)

Argument set 12

- A.** Specimen A consists only of amylase. Amylase is not an enzyme. So specimen A does not contain any enzymes.
- B.** The website of the International Institute for the Advancement of Biochemistry explains that amylase is an enzyme. Therefore any specimen consisting of amylase contains an enzyme.
- C.** According to an article in the Washington Post, the International Institute for the Advancement of Biochemistry is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the New York Times, the International Institute for the Advancement of Biochemistry does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 13

- A.** The asthenosphere is only composed of peridotite. Peridotite does not contain any pyroxene. So the asthenosphere does not contain pyroxene.
- B.** The website of the International Institute for the Advancement of Geology explains that peridotite contains pyroxene. Therefore anything containing peridotite contains pyroxene.
- C.** According to an article in the Daily News, the International Institute for the Advancement of Geology is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the Houston Chronicle, the International Institute for the Advancement of Geology does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 14

- A.** Vinegar consists only of acetic acid. Acetic acids do not contain carboxylate ions. So vinegar does not contain carboxylate ions.
- B.** The website of the American School of Biomolecular Studies explains that acetic acid does contain carboxylate ions. Therefore anything consisting of acetic acid contains carboxylate ions.
- C.** According to an article in the San Francisco Post, the American School of Biomolecular Studies is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to a documentary on CNN, the American School of Biomolecular Studies does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 15

- A.** The Coefficient of Variation is a measure of data dispersion. Data dispersion is not affected by mean data value. So the Coefficient of Variation is not affected by mean data value.
- B.** The website of the International Institute of Global Statistics explains that data dispersion is affected by mean data value. Therefore any measure of data dispersion is affected by mean data value.
- C.** According to an article in the Wall Street Journal, the International Institute of Global Statistics is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the Chicago Tribune, the International Institute of Global Statistics does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 16

- A.** Patient A is infected with the Norovirus. Antibiotics cannot treat the Norovirus. So patient A cannot be healed with antibiotics.
- B.** The website of the European Medical Health Society explains that antibiotics can treat the Norovirus. Therefore any patient infected with the Norovirus can be healed with antibiotics.
- C.** According to an article in the Denver Post, the European Medical Health Society is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the St. Petersburg Times, the European Medical Health Society does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 17

- A.** The function f is the derivative of a measurable function. Measurable functions are not smooth. So function f is not the derivative of a smooth function.
- B.** The website of the British Society of Mathematics explains that measurable functions are smooth. Therefore any function that is the derivative of a measurable function is the derivative of a smooth function.
- C.** According to an article in the Newsday, the British Society of Mathematics is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the Los Angeles Times, the British Society of Mathematics does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 18

- A.** The core of the Sun is in a self-correcting equilibrium. The fusion rate in a self-correcting equilibrium is not constant. So the fusion rate in the core of the Sun is not constant.
- B.** The website of the International Institute of Astronomy explains that the fusion rate in a self-correcting equilibrium is constant. Therefore the fusion rate of any object that is in a self-correcting equilibrium is constant.
- C.** According to an article in the Daily News, the International Institute of Astronomy is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the Houston Chronicle, the International Institute of Astronomy does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 19

- A.** The rain over Luxembourg city at 11:30 a.m. fell from a cumulonimbus cloud. Cumulonimbus clouds are not vertical clouds. So the rain over Luxembourg city at 11:30 a.m did not fall from a vertical cloud.
- B.** The website of the European Society for Climate Change explains that cumulonimbus clouds are vertical clouds. Therefore any rain falling from a cumulonimbus cloud falls from a vertical cloud.
- C.** According to an article in the Philadelphia Inquirer, the European Society for Climate Change is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the Star Tribune, the European Society for Climate Change does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Argument set 20

- A.** Specimen Z belongs to a species of bipedal carnivores. Bipedal carnivores do not have bent claws on their forelimbs. So Specimen Z does not have bent claws on its forelimbs.
- B.** The website of the American Institute for the Advancement of Zoology explains that bipedal carnivores have bent claws on their forelimbs. Therefore any specimen of a species of bipedal carnivores has bent claws on its forelimbs.
- C.** According to an article in the San Francisco Chronicle, the American Institute for the Advancement of Zoology is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore the explanations on its website cannot be trusted.
- D.** According to an article in the Seattle Times, the American Institute for the Advancement of Zoology does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore the explanations on this website cannot be trusted.

Scientific context (with supported premises)

Argument set 21

- A.** Specimen A consists only of amylase. The 2003 Encyclopedia of Biochemistry states that amylase is not an enzyme. So specimen A does not contain any enzymes.
- B.** The International Institute for the Advancement of Biochemistry has published new research results in 2006 that show that amylase is an enzyme. Therefore any specimen consisting of amylase contains an enzyme.
- C.** According to an article in the Washington Post, the International Institute for the Advancement of Biochemistry is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the New York Times, the International Institute for the Advancement of Biochemistry does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 22

- A.** The asthenosphere is only composed of peridotite. The 2002 Encyclopedia of Sedimentology states that peridotite does not contain any pyroxene. So the asthenosphere does not contain pyroxene.
- B.** The International Institute for the Advancement of Geology has published new research results in 2007 that show that peridotite contains pyroxene. Therefore anything containing peridotite contains pyroxene.
- C.** According to an article in the Daily News, the International Institute for the Advancement of Geology is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the Houston Chronicle, the International Institute for the Advancement of Geology does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 23

- A.** Vinegar consist only of acetic acid. The 2005 Encyclopedia of Chemistry states that acetic acids do not contain carboxylate ions. So vinegar does not contain any carboxylate ions.
- B.** The American School of Biomolecular Studies has published new research results in 2011 that show that acetic acids contain carboxylate ions. Therefore anything consisting of acetic acid contains carboxylate ions.
- C.** According to an article in the San Francisco Post, the American School of Biomolecular Studies is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to a documentary on CNN, the American School of Biomolecular Studies does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 24

- A.** The Coefficient of Variation is a measure of data dispersion. The 2000 Encyclopedia of Statistics states that data dispersion is not affected by mean data value. So the Coefficient of Variation is not affected by mean data value.
- B.** The International Institute of Global Statistics has published new research results in 2010 that show that data dispersion is affected by mean data value. Therefore any measure of data dispersion is affected by mean data value.
- C.** According to an article in the Wall Street Journal, the International Institute of Global Statistics is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the Chicago Tribune, the International Institute of Global Statistics does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 25

- A.** Patient A is infected with the Norovirus. The 2002 Encyclopedia of Medicine states that antibiotics cannot treat the Norovirus. So patient A cannot be healed with antibiotics.
- B.** The European Medical Health Society has published new research results in 2014 that show that antibiotics can treat the Norovirus. Therefore any patient infected with the Norovirus can be healed with antibiotics.
- C.** According to an article in the Denver Post, the European Medical Health Society is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the St. Petersburg Times, the European Medical Health Society does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 26

- A.** The received signal strength in a mobile device is proportional the radius of the cell tower. The 2005 Encyclopedia of Electrical Engineering states that the radius of the cell tower is not proportional to the used frequency. So the received signal strength in a mobile device is not proportional to the used frequency.
- B.** The British Society of Electrical Engineering has published new research results in 2014 that show that the radius of the cell tower is proportional to the used frequency. Therefore any quantity proportional to the radius of the cell tower is proportional to the used frequency.
- C.** According to an article in the Newsday, the British Society of Electrical Engineering is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the Los Angeles Times, the British Society of Electrical Engineering does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 27

- A.** The core of the Sun is in a self-correcting equilibrium. The 2006 Encyclopedia of Spatial Astronomy states that the fusion rate in a self-correcting equilibrium is not constant. So the fusion rate in the core of the Sun is not constant.
- B.** The International Institute of Astronomy has published new research results in 2016 that show that the fusion rate in a self-correcting equilibrium is constant. Therefore the fusion rate of any object that is in a self-correcting equilibrium is constant.
- C.** According to an article in the Daily News, the International Institute of Astronomy is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the Houston Chronicle, the International Institute of Astronomy does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Argument set 28

- A.** The rain over Luxembourg city at 11:30 a.m. fell from a cumulonimbus cloud. The 1998 Encyclopedia of Climatology states that cumulonimbus clouds are not vertical clouds. So the rain over Luxembourg city at 11:30 a.m. did not fall from a vertical cloud.
- B.** The European Society for Climate Change has published new research results in 2005 that show that cumulonimbus clouds are vertical clouds. Therefore any rain falling from a cumulonimbus cloud falls from a vertical cloud.
- C.** According to an article in the Philadelphia Inquirer, the European Society for Climate Change is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the Star Tribune, the European Society for Climate Change does not exist, and the website operating under this name is a hoax website run by a comedian. Therefore these publications cannot be trusted.

Argument set 29

- A.** Specimen Z belongs to a species of bipedal carnivores. The 1997 Encyclopedia of Zoology states that bipedal carnivores do not have bent claws on their forelimbs. So Specimen Z does not have bent claws on its forelimbs.
- B.** The American Institute for the Advancement of Zoology has published new research results in 2004 that show that bipedal carnivores have bent claws on their forelimbs. Therefore any specimen of a species of bipedal carnivores has bent claws on its forelimbs.
- C.** According to an article in the San Francisco Chronicle, the American Institute for the Advancement of Zoology is a pseudoscientific organization that is funded by a fundamentalist church and hires its staff based on church membership rather than scientific expertise. Therefore its results cannot be trusted.
- D.** According to an article in the Seattle Times, the American Institute for the Advancement of Zoology does not exist, and the publications published under this name are a hoax. Therefore these publications cannot be trusted.

Scientific context (emphasis on years)

Argument set 30

- A.** Specimen A consists only of amylase. The 2003 Encyclopedia of Biochemistry states that amylase is an enzyme. So specimen A consists of an enzyme.
- B.** A peer-reviewed research article by Smith et al. from 2006 has established that amylase is not an enzyme. Therefore no specimen consisting only of amylase consists of an enzyme.
- C.** A study that the Biology Laboratory of Harvard University has published in 2011 corrects mistakes made in the study by Smith et al. and concludes that amylase is a biologically active enzyme.
- D.** A study that the Biochemistry Laboratory of Oxford University has published in 2011 corrects mistakes made in the study by Smith et al. and concludes that amylase is a biologically inactive enzyme.

Argument set 31

- A.** The asthenosphere consists only of peridotite. The 2002 Encyclopedia of Sedimentology states that peridotite contains pyroxene. So the asthenosphere contains pyroxene.
- B.** A peer-reviewed research article by Martin et al. from 2007 has established that peridotite does not contain pyroxene. Therefore nothing that consists only of peridotite contains pyroxene.
- C.** A study that the geomorphology lab of Harvard University has published in 2012 corrects mistakes made in the study by Martin et al. and concludes that peridotite contains only crystalized pyroxene.
- D.** A study that the Metamorphic Unit of Oxford University has published in 2012 corrects mistakes made in the study by Martin et al. and concludes that peridotite contains only non-crystalized pyroxene.

Argument set 32

- A.** Vinegar consists only of acetic acids. The 2005 Encyclopedia of Chemistry states that acetic acid contains carboxylate ions. So Vinegar contains carboxylate ions.
- B.** A peer-reviewed research article by Jordan et al. from 2008 has established that acetic acid does not contain any carboxylate ions. Therefore nothing consisting only of acetic acid contains carboxylate ions.
- C.** A study that the Inorganic Chemistry Laboratory of Harvard University has published in 2011 corrects mistakes made in the study by Jordan et al. and concludes that acetic acid contains only stabilized carboxylate ions.
- D.** A study that the Biochemistry Laboratory of Oxford University has published in 2011 corrects mistakes made in the study by Jordan et al. and concludes that acetic acid contains only non-stabilized carboxylate ions.

Argument set 33

- A.** The Coefficient of Variation is a measure of data dispersion. The 2000 Encyclopedia of Statistics states that data dispersion is affected by mean data value. So the Coefficient of Variation is affected by mean data value.
- B.** A peer-reviewed research article by Luke et al. from 2002 has established that data dispersion is not affected by mean data value. So no measure of data dispersion is affected by mean data value.
- C.** A study that the Harvard Faculty of Statistics has published in 2007 corrects mistakes made in the study by Luke et al. and concludes that data dispersion is over-estimated, and thus affected, by mean data value.
- D.** A study that the Statistical Lab of Oxford University has published in 2007 corrects mistakes made in the study by Luke et al. and concludes that data dispersion is under-estimated, and thus affected, by mean data value.

Argument set 34

- A.** Patient A is infected with the Norovirus. The 2002 Encyclopedia of Medicine states that antibiotics can treat the Norovirus. So patient A can be healed with antibiotics.
- B.** A peer-reviewed research article by Gold et al. from 2007 has established that antibiotics cannot treat the Norovirus. Therefore no patient infected with the Norovirus can be healed with antibiotics.
- C.** A study that the Medical School of Harvard University has published in 2013 corrects mistakes made in the study by Gold et al. and concludes that only cyclic antibiotics can treat Norovirus.
- D.** A study that the Institute of Bacterial Sciences of Oxford University has published in 2013 corrects mistakes made in the study by Gold et al. and concludes that only non-cyclic antibiotics can treat Norovirus.

Argument set 35

- A.** The received signal strength in a mobile device is proportional the radius of the cell tower. The 2005 Encyclopedia of Electrical Engineering states that the radius of the cell tower is proportional to the used frequency. So the received signal strength in a mobile device is proportional to the used frequency.
- B.** A peer-reviewed research article by Schiltz et al. from 2009 has established that the radius of the cell tower is not proportional to the used frequency. Therefore no quantity proportional to the radius of the cell tower is proportional to the used frequency.
- C.** A study that the Telecommunication Engineering group of Harvard University has published in 2015 corrects mistakes made in the study by Schiltz et al. and concludes that the radius of the cell tower is proportional to the used frequency with a proportionality constant greater than $4.5 \text{ dB}\mu\text{V}/\text{m}^2$.
- D.** A study that the Telecommunication Institute of Oxford University has published in 2015 corrects mistakes made in the study by Schiltz et al. and concludes that the radius of the cell tower is proportional to the used frequency with a proportionality constant smaller than $3.8 \text{ dB}\mu\text{V}/\text{m}^2$.

Argument set 36

- A.** The core of the Sun is in a self-correcting equilibrium. The 2006 Encyclopedia of Spatial Astronomy states that the fusion rate in a self-correcting equilibrium is oscillating. So the fusion rate in the core of the Sun is oscillating.
- B.** A peer-reviewed research article by Holof et al. from 2014 has established that the fusion rate in a self-correcting equilibrium is not oscillating. Therefore the fusion rate of any object that is in a self-correcting equilibrium is not oscillating.
- C.** A study that the Spatial Laboratory of Harvard University has published in 2017 corrects mistakes made in the study by Holof et al. and concludes that the fusion rate in a self-correcting equilibrium is oscillating at a frequency of 12 nHz.
- D.** A study that the Cosmic Institute of Oxford University has published in 2017 corrects mistakes made in the study by Holof et al. and concludes that the fusion rate in a self-correcting equilibrium is oscillating at a frequency of 550 nHz.

Argument set 37

- A.** The rain over Luxembourg city at 11:30 a.m. fell from a cumulonimbus cloud. The 1998 Encyclopedia of Climatology states that cumulonimbus clouds are vertical clouds. So the rain over Luxembourg city at 11:30 a.m. fell from a vertical cloud.
- B.** A peer-reviewed research article by Klein et al. from 2003 has established that cumulonimbus clouds are not vertical clouds. Therefore rain falling from a cumulonimbus cloud does not fall from a vertical cloud.
- C.** A study that the Meteorology Institute of Harvard University has published in 2010 corrects mistakes made in the study by Klein et al. and concludes that cumulonimbus clouds are vertical clouds that extend to less than 21,000m above the ground.
- D.** A study that the Oxford Climatology Faculty has published in 2010 corrects mistakes made in the study by Klein et al. and concludes that cumulonimbus clouds are vertical clouds that extend to more than 27,000m above the ground.

Argument set 38

- A.** Specimen Z belongs to a species of bipedal carnivores. The 1997 Encyclopedia of Zoology states that bipedal carnivores have bent claws on their forelimbs. So Specimen Z has bent claws on its forelimbs.
- B.** A peer-reviewed research article by Rogers et al. from 2009 has established that bipedal carnivores do not have bent claws on their forelimbs. Therefore no specimen of a species of bipedal carnivores has bent claws on its forelimbs.
- C.** A study that the Institute of Zoology of Harvard University has published in 2017 corrects mistakes made in the study by Rogers et al. and concludes that bipedal carnivores have claws on their forelimbs that are bent to the right.
- D.** A study that the Artificial Modelling Institute of Oxford University has published in 2017 corrects mistakes made in the study by Rogers et al. and concludes that bipedal carnivores have claws on their forelimbs that are bent to the left.

3-Cycle reinstatement sets

Argument set 39

- A.** The sound of the letter "ł" in Polish is an approximant. The 1962 Encyclopedia of Linguistics explains that approximants are not pulmonic consonants. So the sound of the letter "ł" in Polish is not a pulmonic consonant.
- B.** The 2003 Encyclopedia of Phonetics states that approximants are continuants. The International Institute for the Advancement of Phonology has published new research results in 2006 that show that all continuants are sonorants. The European Phonetics Centre has published new research results in 2008 that show that all sonorants are pulmonic consonants. Therefore every approximant is a pulmonic consonant.
- C.** The 2003 Encyclopedia of Phonetics states that the institution running under the name "International Institute for the Advancement of Phonology" is not a serious scientific institution, so its publications cannot be trusted.
- D.** The International Institute for the Advancement of Phonology states that the institution running under the name "European Phonetics Centre" is not a serious scientific institution, so its publications cannot be trusted.
- E.** The European Phonetics Centre states that the 2003 Encyclopedia of Phonetics contains many erroneous assertions and cannot be trusted.

Argument set 40

- A.** Skull A is the skull of an Australopithecus. The 1961 Encyclopedia of Evolutionary Biology explains that Australopithecus is not a species of the genus Homo. So skull A is not the skull of a species of the genus Homo.
- B.** The 2003 Encyclopedia of Human Evolution states that Australopithecus descends from Ardipithecus. The International Institute for the Advancement of Human Paleontology has published new research results in 2006 that show that Ardipithecus descends from Sahelanthropus. The European Paleoanthropology Centre has published new research results in 2008 that show that all species descending from Sahelanthropus are species of the genus Homo. Therefore Australopithecus is a species of the genus Homo.
- C.** The 2003 Encyclopedia of Human Evolution states that the institution running under the name "International Institute for the Advancement of Human Paleontology" is not a serious scientific institution, so its publications cannot be trusted.
- D.** The International Institute for the Advancement of Human Paleontology states that the institution running under the name "European Paleoanthropology Centre" is not a serious scientific institution, so its publications cannot be trusted.
- E.** The European Paleoanthropology Centre states that the 2003 Encyclopedia of Human Evolution contains many erroneous assertions and cannot be trusted.